



Illinois Lake Management Association's 34th Annual Conference

March 14th - 15th, 2019

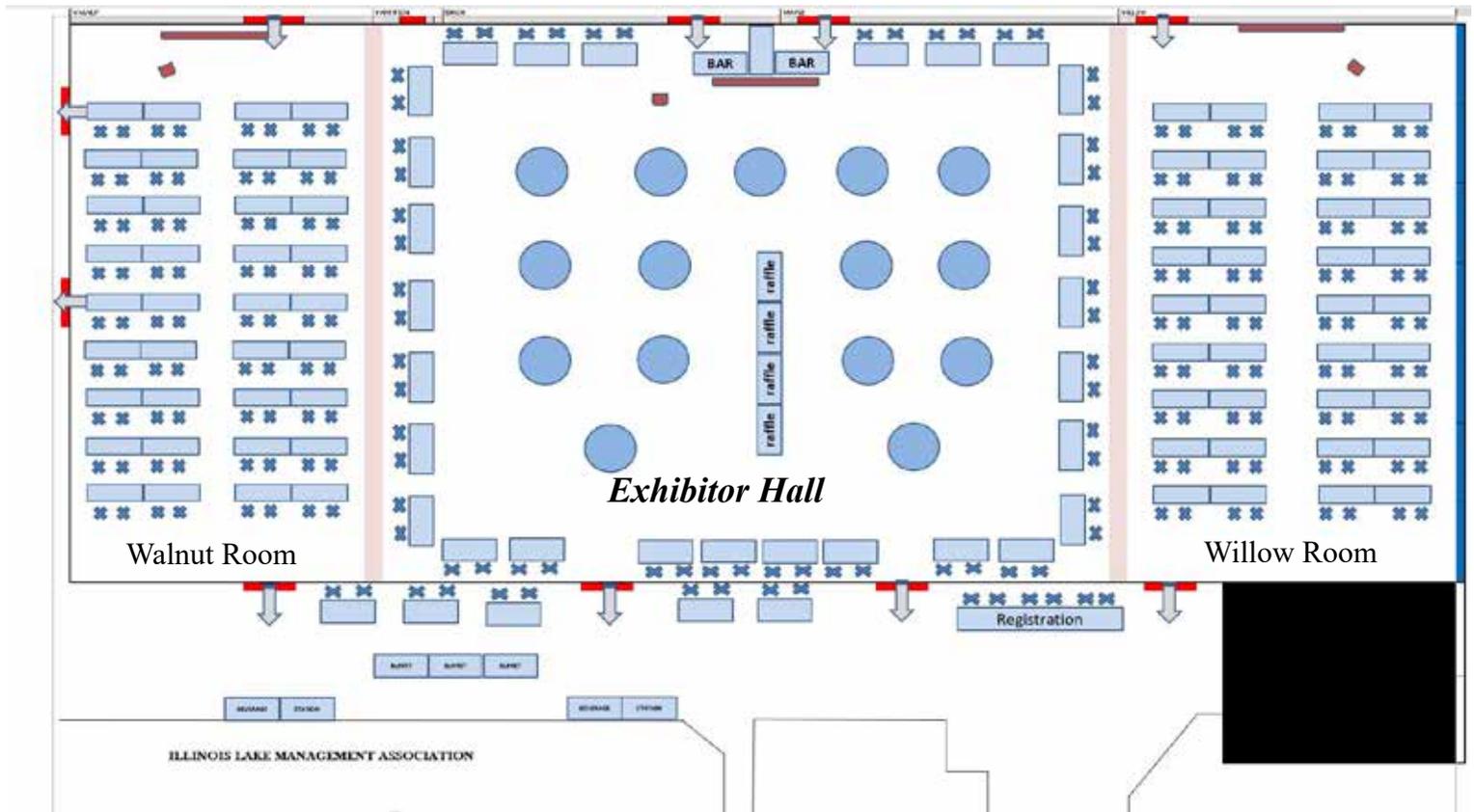
Crystal Lake Holiday Inn
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800 South Route 31
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[REMINDERS]

- Nametags:** Be sure to wear your nametag during the conference. Your nametag is both a ‘ticket’ for conference meals and events, and helpful for sparking conversations with faces you don’t know. Should you lose your nametag simply visit the registration desk and we’ll be happy to print off a new one.
- Exhibitor Hall:** All breaks and meals will be held in the Exhibitor Hall. Be sure to visit with the exhibitors to discuss aquatic plant management, water quality enhancement, laboratory testing, monitoring equipment, and much more.
- Auction Raffle Items:** An auction raffle will be held in the Exhibitor Hall all day Thursday and close at noon on Friday. Simply place as many tickets in the basket of the items you can’t bear to leave the conference without. It only takes one ticket to win, but your odds only get better with more tickets! All proceeds go towards the ILMA scholarship fund, so splurging is beneficial to the minds of the next generation of scientists. You must be present at the drawing to win.
- Photo Contest:** Don’t forget to cast your vote for the 2019 ILMA photograph of the year. Photos are on display in the Exhibitor Hall. The ballots and ballot box are located with the display. The winner will receive \$50 and will be featured on the 2020 conference program.





2019 Overview Agenda

Thursday March 14th

Registration is open from 8:00am – 5:00pm

9:00-10:30	Concurrent Sessions.....	Walnut / Willow
10:30-11:00	Break.....	Exhibitor Hall
11:00-12:00	Joint Session.....	Exhibitor Hall
12:00-1:30	Lunch.....	Exhibitor Hall
1:30-3:00	Concurrent Sessions.....	Walnut / Willow
3:00-3:30	Break.....	Exhibitor Hall
3:30-5:00	Conference Keynote (Joint Session).....	Exhibitor Hall
5:00-6:00	Exhibitors Reception.....	Exhibitor Hall
6:00-7:00	Dinner.....	Exhibitor Hall
7:00-7:30	Annual ILMA Member Meeting.....	Exhibitor Hall
7:30-9:30	Open Social.....	Exhibitor Hall

Friday March 15th

Registration is open from 8:00am – 12:00pm

8:30-10:00	Concurrent Sessions.....	Walnut / Willow
10:00-10:30	Break.....	Exhibitors Hall
10:30-12:00	Concurrent Sessions.....	Walnut / Willow
12:00-1:30	Lunch (Bucket Raffle Drawing).....	Exhibitor Hall
1:30-3:00	Closing Sessions.....	Walnut / Willow
3:00-3:15	Conference Closeout / Drawing for Winner of the Kayak Package.....	Exhibitor Hall
4:00-7:00	Frog Calling Survey Workshop.....	Willow

Saturday March 16th

8:00-12:00	AIS Workshop [CANCELED].....	Willow*
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**Workshop has been canceled, it will be rescheduled later this spring*



Thursday Morning March 14th

9:00-10:30 Concurrent Sessions Walnut & Willow Rooms

Willow Room [Plastics in Waterways]
 Moderator – *Quentin Jordan*

Walnut Room [Dredging Projects]
 Moderator – *Peter Berrini*

9:00
 Aquatic Plastic Pollution: Illinois-Indiana Sea Grant’s Role in Research and Outreach
Sarah Zack, Illinois-Indiana Sea Grant

9:00
 OSR Systems Hydraulic Dredging
Michael Kohutko, OSR Systems

9:30
 Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community
Sheyda Esnaashari, Alliance for the Great Lakes

9:30
 Dealing with Dredging Concerns
Rob Rinkenberger, Integrated Lake Management

10:00
 Role of Benthic Substrate, Discharge, and Benthic Biofilm Growth on Transport and Retention of Microplastic Fibers in Streams
Elizabeth Berg, Loyola University

10:00
 North Mill Creek Stream Restoration
Leslie Berns, Lake County Forest Preserve District

10:30-11:00 Break Exhibitor Hall

11:00-12:00 An Update to Inspiration Exhibitor Hall

Inspiring awareness to Empower Action: McHenry County Schools Environmental Education Program

In 1987 the McHenry County Schools Environmental Education Program or MCSEEP began as a recycling education program. Since then, we have grown into a countywide provider of diverse, comprehensive environmental education. MCSEEP PreK-12 presentations address the environmental issues facing today’s students and their families. We have taught over 22,000 students each year and attend over 60 schools in the county. MCSEEP also sponsors two county groundwater festivals which provide middle school students with hands-on activities with water professionals in the field.

William Donato, McHenry County
Gigi Carlson, Woodstock Community Unit School District 200



McHenry County
Schools Environmental Education Programs

2017-18
 SCHOOL YEAR:

INSPIRING AWARENESS
to
EMPOWER ACTION

12:00-1:30 Lunch (*Scholarship Awards*) Exhibitor Hall

Thursday Afternoon March 14th

1:30-3:00 Concurrent Sessions Walnut & Willow Rooms

Willow Room [Pollutant Issues]
Moderator – Jeff Boeckler

1:30
 Lake Michigan’s Heavy Metal Policies
Paul Witry, Loyola University

2:00
 What is Alum? A Case Study on Lake Barrington for Improving
 Water Quality
*Alana Bartolai & John Holz, Lake County Health Department /
 HAB Aquatics*

2:30
 Septic Leachate Assessment of Fish Lake, Indiana
Jeff Boeckler, Northwater Consulting

Walnut Room [HOA ‘Splash’ Panel]
Moderator – Karen Clementi

1:30-3:00
 Highlights from multiple HOAs and lake managers on projects
 throughout the state (interactive session)

3:00-3:30 Break Exhibitor Hall

3:30-5:00 Keynote Session Exhibitor Hall

The Ecology and Culture of Water

Dr. Gerould Wilhelm

Conservation Research Institute



Dr. Wilhelm’s career has included 22 years as a researcher at the Morton Arboretum and 22 years as the owner of the Conservation Design Forum. Additionally, he is a founding member of the Conservation Research Institute (CRI). The CRI is a private, 501(c)(3) organization established in 1997 and is dedicated to the promotion of planning, design, installation restoration, and long-term management of sustainable ecological systems in built and natural environments through applied research, education, and outreach. Dr. Wilhelm is a renowned botanist, and is the ‘Wilhelm’ in the duo of Swink & Wilhelm (a reference for any amateur or professional botanists working in the Chicagoland area). Come hear his talk on the influence of water within our landscape, how it has the power to both physically shape our environmental and the perception of living spaces within it.

5:00-6:00 Exhibitor Reception Exhibitor Hall

6:00-7:30 Dinner and ILMA Annual Meeting (Lake Awards) Exhibitor Hall

7:30-10:30 Open Social* Exhibitor Hall

*Includes an acoustical performance by Triple Play



Friday Morning March 15th

8:30-10:00 Concurrent Sessions Walnut & Willow Rooms

Willow Room [Aquatic Plants]

Moderator – Tim Gardner

8:30

The Many Roles of Aquatic Plants in Lakes
Paul Skawinski, University of Wisconsin Stevens Point

9:00

Multi-faceted Approaches to Pond Management
Emily Reed, Integrated Lakes Management

9:30

Reliance on Science Proves to be the Solution to Bringing Hybridized Milfoil Under Control, a Case Study
Tim Gardner & Joe Rush, Clarke / JadECO

Walnut Room [Urban Runoff]

Moderator – Keith Gray

8:30

Lawn to Lake Program, Natural Lawn Care Practices for Clean Lakes
Allison Neubauer, Illinois-Indiana Sea Grant

9:00

Impacts of Winter Deicing on Aquatic Systems
Deanna Doohaluk & Stephen McCracken, The Conservation Foundation/DuPage River Salt Creek Workgroup

9:30

Implementation of Chloride Reduction Strategies for Local Agencies
Michael Reynolds, Village of Buffalo Grove

10:00-10:30 Break Exhibitor Hall

10:30-12:00 Concurrent Sessions Walnut & Willow Rooms

Willow Room [Managing Fish]

Moderator – Leonard Dane

10:30

Creating and Maintaining a Healthy Fishery in Illinois
Nate Herman & Austin Bennett, Herman Brothers Lake & Land Management

11:00

Reassessment of Iowa Darter Habitat in Illinois
Andy Stites, Illinois Natural History Survey

11:30

Active Bluegill Management for Improved Angling Quality
Mike Mounce, Illinois DNR

Walnut Room [Lake Management Panel]

Moderator – Lisa Woolford & Brian Valleskey

10:30-12:00

Projects Are Getting Done Through the Nine Lakes Watershed Partnership: A panel discussion with the members involved.

12:00-1:30 Lunch (Part I of Raffle Items, *must be present to win*) Exhibitor Hall

Friday Afternoon March 15th

<p>1:30-3:00 Closing Session</p> <p>Willow Room [Wildlife (Other than Fish)] <i>Moderator – Joe Bartletti</i></p> <p>1:30 Semi-aquatic Mammals: A Love-Hate Relationship for Land Managers <i>Andrew Rutter, Lake County Forest Preserve District</i></p> <p>2:00 Propagation for Conservation of Common Freshwater Mussels in an Urban Stream System: What Do They Do and Why Should I Care? <i>Jessi DiMartini, Forest Preserve District of DuPage County</i></p> <p>2:30 Conservation of the Blanding’s Turtle within the Chiwaukee Illinois Beach Lake Plain <i>Gary Glowicki, Lake County Forest Preserve District</i></p>	<p>..... Walnut & Willow Rooms</p> <p>Walnut Room [Citizen Monitoring & Algal Blooms] <i>Moderator – Alana Bartolai</i></p> <p>1:30 Drone-based Water Quality Monitoring for Harmful Algal Blooms: A Review <i>Ruopu Li, Southern Illinois University-Carbondale</i></p> <p>2:00 Using Citizen Science to Tackle a Blue Green Algae Problem in Long Lake <i>Laura Risser, Squaw Creek Clean Water Alliance- Woods & Wetlands of the Sierra Club</i></p> <p>2:30 Citizen Science in Action <i>Greggory Miller & Holly Hudson, IEPA & CMAP</i></p>
<p>3:00-3:15 Conference Closeout Exhibitor Hall (Part II of Raffle Items, 50/50 and Kayak Drawing - <i>must be present to win</i>)</p>	

Friday Workshop March 15th

4:00-7:00

Calling Frog Survey

Allison Sacerdote-Velat, Chicago Academy of Science

This citizen science program has been based at the Chicago Academy of Sciences/Peggy Notebaert Nature Museum since 2014. With over 100 monitoring routes, the Calling Frog Survey spans 7 counties in northeastern Illinois and Northwestern Indiana. Volunteer frog monitors help record species presence and breeding call intensity to help track species distribution trends, population trends, and response of frogs and toads to habitat restoration. The workshop is for both beginning & experienced monitors. We’ll introduce attendees to the 13 regional frog and toad species and their natural history, highlighting visual and acoustic identification. We will discuss our monitoring protocol, data collection, how to set up a survey route, and share some insights from our 2018 field season.





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Conference Abstracts

Plastics in Waterways **Willow Room 9:00-10:30, March 14th**

Aquatic Plastic Pollution: Illinois-Indiana Sea Grant's Role in Research and Outreach

Sarah Zack, Illinois-Indiana Sea Grant

Email: szack@illinois.edu

Microplastics, a type of land-based, anthropogenic marine debris that includes particles less than 5 millimeters in size, and their potential ecosystem impact, are of growing interest in Illinois. Microplastic pollution in freshwater systems is still an emerging science and researchers have just begun to describe its scope, abundance, and distribution. There is still much unknown about the long-term effects, including impacts to aquatic food webs. Since 2012, Illinois-Indiana Sea Grant (IISG) has been working to conduct and fund research and educate the public about microplastics and marine debris. IISG is dedicated to supporting continued research on emerging contaminants such as microplastics, and recognizes that there is a need for more information to determine the long-term effects of this pollution on Midwestern lakes and rivers. This talk will provide an introduction to microplastic sources and types and potential impacts, as well as an overview of recent IISG research on this emerging contaminant.

Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community

Sheyda Esnaashari, Alliance for the Great Lakes

Email: sesnaashari@greatlakes.org

The Great Lakes are the largest source of surface freshwater in the world and provide drinking water for roughly 40 million people. Lurking beneath the surface of this great resource are millions of tiny particles known as microplastics. Their source ranges from larger plastics such as bags and other containers, to the small fibers that make up your fleece jacket. Since 1950, the production and consumption of plastic has increased exponentially and current data indicates that only 9% of the plastic we use is recycled, while the remaining plastic ends up in landfills or our environment. We all love and depend on clean water. Activated by personal experience and a global call to action, communities across the Great Lakes have started to address plastic pollution in their own backyard. In order to connect and support the palpable desire to take real and meaningful action, the Alliance released Plastic-Free Great Lakes: An Advocacy Toolkit to Make a Difference in Your Community. In this toolkit, you'll find lessons from all levels of government across the Great Lakes region, and sample policies designed to reduce plastic pollution. We also provide you with the tools you need to make an impact.

Role of Benthic Substrate, Discharge, and Benthic Biofilm Growth on Transport and Retention of Microplastic Fibers in Streams

Elizabeth Berg, Loyola University

Email: eberg@luc.edu

Microplastics (particles < 5mm) are an emerging aquatic pollutant of concern. Microplastics can enter food chains, adsorb harmful chemical pollutants, and are ubiquitous in aquatic ecosystems. Streams are potential sources of microplastics to downstream ecosystems, but the fate and transport of microplastic in streams have not been systematically analyzed. We elucidate how environmental characteristics affect plastic retention rates in streams by adapting spiraling metrics used for particulate organic matter transport. Using 50m outdoor artificial streams at Notre Dame's Linked Experimental Ecosystem Facility (ND-LEEF), we manipulated stream discharge (e.g. baseflow vs. stormflow), benthic biofilm colonization (e.g. full colonization vs. post-scouring), and substrate size (e.g. sand, pea gravel, cobble, mixed) and measured the retention rates of microplastics under these conditions in a fully-crossed design. We released microplastic slurries into the streams and collected water samples at regular timed intervals downstream. We filtered those samples and counted the plastics under a dissecting microscope. By comparing the plastics to a conservative tracer (i.e. salt solution), we found plastic's depositional velocity (V_{dep}), representing the velocity at which an individual particle is deposited to the benthos. Preliminary results revealed that the V_{dep} of microplastics was approximately 3-fold higher in streams with mature biofilm (i.e. high algal biomass) compared to the same streams post-scouring. While stream algal disturbance (i.e. scouring) drives microplastic transport, retention in baseflow streams appears to be high. These data provide novel insights into the environmental factors controlling microplastic fate and are critical to understand the role of lotic retention in global plastic budgets.

Dredging Projects **Walnut Room 9:00-10:30, March 14th**

OSR Systems Hydraulic Dredging

Michael Kohutko, OSR Systems

Email: michael@pondclean.com

We propose presenting our Hydraulic Dredging Presentation. This presentation covers why waterways need to be dredged, what kind of materials are dredged, the old method of dredging (Mechanical), the newer method of dredging (Hydraulic), they types of Hydraulic dredging systems (Augers, Cutters, Divers), pros and cons of Auger and Cutter head dredges, OSR Systems Method of dredging, case studies on a retention pond in Downers Grove, Harbor in Elkhorn, WI. and Trout Ponds at McGraw Wildlife in Elgin, IL

Dealing with Dredging Concerns: Discussion of Today's Lakes and Ponds and the Need for Dredging

Rob Rinkenberger, Integrated Lake Management

Email: rinkenberger@ilmenvironments.com

We are going to discuss the current state of most lakes and ponds in the area and when to decide the need for dredging exists. Most lakes in the area were developed during the 1950-60's era. During this time there was not much thought to putting BMPs in place for the lake's protection. Many lakes in the area are actually man-made impoundments created by dams and flooded wetlands. Fast forward to today. We are met with the challenges of lakes that are heavily loaded with sediment and nutrients from years of unchecked run off and outdated systems. Fortunately, today we have made great strides in implementing regulations and BMPs to protect our lakes for any current projects within the watersheds. Now we are left to deal with the current issues that are already in the lakes which in many cases involves dredging!

We will discuss the challenges faced in building a dredging project and why we want to dredge. Identifying the problems and concerns. Why did this happen? How are we going to fix it? When are we going to do it? Project success, funding and protection for future generations.

North Mill Creek Stream Restoration

Leslie Berns, Lake County Forest Preserve District

Email: lberns@lcfpd.org

Lake County Forest Preserve acquired the land that makes up Ethel's Woods Forest Preserve in 2001 that included the pristine looking 58 acre Rasmussen Lake. Once acquired and ecological monitoring began, the lake turned out to have significant water quality issues. This is the story of how one agency returned a sediment filled lake back into a free flowing stream by removing an earthen dam and restoring North Mill Creek.



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Conference Abstracts

Pollutant Issues **Willow Room 1:30-3:00, March 14th**

Lake Michigan's Heavy Metal Policies

Paul Witry, Loyola University

Email: pwitry@luc.edu

In recent years, Lake Michigan has become a source of intense competition for states seeking to utilize its fresh water. The lake balances the needs of many neighboring states and the varied uses they have for the lakes water. These diverse uses tend to differ state to state and have led to conflict over the impact these activities have on the lakes water quality. Upon preliminary research it was found that each state, as result of their economic activities, has a different vision for how the lake water resource should be treated. These economic activities also influence state policymakers to craft legislation that is in line with their vision of how the lakes resource should be used. The intent of this project is to compare regulations preventing heavy metal pollution in Chicago and compare them to similar legislation in neighboring states. Further primary and secondary research must be conducted in order to determine each state's legal mechanism for pollution prevention while also exploring the interaction these laws have with each other.

What is Alum? A Case Study on Lake Barrington for Improving Water Quality

Alana Bartolai & John Holz, Lake County Health Department / HAB Aquatics

Email: ABartolai2@lakecountyl.gov / jholz@habaquatics.com

Teri Holland, Illinois Environmental Protection Agency

Email: teri.holland@illinois.gov

Alum (aluminum sulfate) is used in lakes to reduce the amount of phosphorus in the water. It is most commonly used to control phosphorus release from lake bottom sediments (internal loading). In 2015, Lake Barrington contracted with HAB Aquatic Solutions to do a whole lake alum treatment to reduce phosphorus concentrations in the lake. Lake Barrington is a 91-acre impoundment lake in the Village of Barrington on the SW corner of Lake County. Lake Barrington had issues with excess nutrients, internal phosphorus loading and harmful blue-green algae. The Lake County Health Department monitored Lake Barrington in 2013 (pre-alum treatment), 2015 post alum treatment, and with the help of the IEPA Volunteer Lake Monitoring Program the lake was monitored again in 2018. Many water quality parameters improved following the alum treatment and improvements remain 3 years post treatment.

Septic Leachate Assessment of Fish Lake, Indiana

Jeff Boeckler, Northwater Consulting

Email: jeff@northwaterco.com

Recent concerns from residents of Fish Lake prompted the local Conservancy District to commission a study to assess whether or not septic systems are negatively impacting the Fish Lake chain and its water quality. Health and surface water quality concerns arising from septic systems can include bacteria and nutrient loading, synthetic detergents, chlorides, and other contaminants. Fish Lake is located in the east-central section of LaPorte County, Indiana, and is comprised of Upper Fish Lake, Mud Lake (139 acres), and Lower Fish Lake (134 acres). The lake is approximately 23 feet at its deepest point in Upper Fish Lake. The 5.7 miles of shoreline is mostly developed with lakeside single family homes, all of which have individual septic systems; the highest density of homes is on Lower Fish Lake. Existing datasets and prior studies have not indicated septic leachate to be an issue however no such studies have directly focused on the subject. The current assessment evaluated a series of septic leachate indicators to draw conclusions and address resident concerns. Components included: Optical Brightening Agents and fluorometry, dissolved organic content, bacteria levels and DNA biomarkers, conductivity, and nutrient concentrations. This presentation will cover assessment methods, extent and duration, results, and conclusions.

HOA ‘Splash’ Session..... **Walnut Room 1:30-3:00, March 14th**

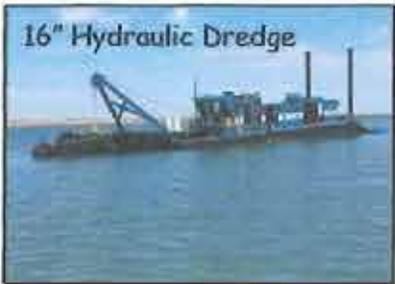
Join us for the first ILMA Splash session! The Splash session will highlight the current activities by multiple homeowners associations and other lake managers. Each representative will discuss their specific challenges and successes. These short format presentations are designed to stimulate open discussion and create problem solving opportunities.

Speakers will include representatives from:

- Apple Canyon Lake in Apple River
- Highland Lake in unincorporated Lake County
- Lake Lindenhurst in the Village of Lindenhurst
- Lake Thunderbird in Putnam
- Loon Lakes near Antioch
- AND MORE

Panel Notes:



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Conference Abstracts

Aquatic Plants Willow Room 8:30-10:00, March 15th

The Many Roles of Aquatic Plants in Lakes

Paul Skawinski, University of Wisconsin Stevens Point

Email: pskawins@uwsp.edu

Native aquatic plants provide a wide variety of essential services to a lake ecosystem. In addition to serving as food at the base of the aquatic food web, they provide shelter, spawning substrate, wave energy absorption, phosphorus reduction, erosion protection, and more. Learn about the many benefits of native aquatic plants, and how invasive aquatic plants can alter the functions of aquatic plant communities in lakes.

Multi-faceted Approaches to Pond Management

Emily Reed, Integrated Lakes Management

Email: ereed@ilmenvironments.com

Creative and successful pond management strategies address the desires of the client, while promoting sustainable management practices and ecological function. Comprehensive plans include strategies such as nutrient inactivation with products like Phoslock, targeted herbicide applications, manual vegetation removal, and native buffer establishment. Presented case studies include lessons learned through managing a public swimming beach for elevated E. coli levels, a small retention pond for excess nutrients, and a large urban lagoon for nuisance algae growth.

Reliance on Science Proves to be the Solution to Bringing Hybridized Milfoil Under Control, a Case Study

Tim Gardner & Joe Rush, Clarke / JadECO

Email: TGardner@clarke.com / jrush@jadecoconsulting.com

Candlewick Lake in Northeastern Illinois is a 210-acre man-made impoundment within a 2,896-acre watershed surrounded by a planned 2,206 residence gated community. Created in late 1970, the lake achieved full pool in 1975 serving as an aesthetic and recreational asset for the community. This lake has a history of having a delicate balance, shifting between a planktonic and a macrophyte dominated community. Lake management has been working diligently to maintain a diverse, quality native plant community while also maintaining recreational access for boating and swimming. Late in 2016 a surprising and significant incursion of an invasive hybrid milfoil appeared. Unsettled by its presence, the more challenging question for the lake management association was how to manage the situation most effectively while not negatively impacting the overall native plant community. Through a very methodical, science based approach coupled with communications to homeowners, a plan and patience paid off. The 100-day post treatment survey confirmed excellent control results. This paper will review the approach and steps taken that led to the successful execution for control of this highly invasive species.

Urban Runoff **Walnut Room 8:30-10:00, March 15th**

Lawn to Lake Program, Natural Lawn Care Practices for Clean Lakes

Allison Neubauer, Illinois-Indiana Sea Grant

Email: neubaue1@illinois.edu

Lawns are a significant feature in the urban environment. These often heavily managed landscapes have the potential to contribute to runoff pollution to waterbodies due to over-fertilization, over-application of pesticides, and overwatering. But they don't have to! Come learn about Lawn to Lake, an outreach program that promotes healthy lawn and landscape practices at the household and community level to protect watersheds in Illinois. Presenters will share the seven principles of natural lawn care and insight into the program's efforts. Walk away with information and resources to apply natural practices to your own lawn and share with neighbors.

Impacts of Winter Deicing on Aquatic Systems

Deanna Doohaluk & Stephen McCracken, The Conservation Foundation/DuPage River Salt Creek Workgroup

Email: DDoohaluk@theconservationfoundation.org

Dissolved Chlorides from winter deicing activities are one of the most common and destructive urban surface and ground water pollutants in North Eastern Illinois. Chlorides are not only toxic to aquatic organisms, they also damage upland vegetation and actively corrode materials used in the construction of our built environment and motor vehicles. Empirical data shows that they are highly persistent, with winter-applied chlorides appearing in river systems into late summer and concentrations trending upward in lakes and ground water. This presentation will cover chloride trends in North Eastern Illinois and provide recommendations on how homeowners, homeowner associations and those responsible for parking lots and sidewalks can reduce their chloride impacts to surface and groundwater.

Implementation of Chloride Reduction Strategies for Local Agencies

Michael Reynolds, Village of Buffalo Grove

Email: MReynolds@vbg.org

In 2014 the Buffalo Grove Public Works Department began a process to improve its snow and ice control plan and in 2016 received the Excellence in Snow and Ice Control award from the American Public Works Association. This award is given to organizations that promote best management practices in snow and ice removal while minimizing environmental impacts. Through the efforts of key department staff and the support of the Office of the Village Manager and the Village Board, Buffalo Grove has become a recognized leader in the region in regard to BMPs with the practices and changes they have made with their winter deicing activities. Changes to their winter maintenance program have reduced costs, increased performance and efficiency, and include eco-friendly initiatives. This presentation will review the steps that the Buffalo Grove Public Works Department has taken to reduce its chloride use and, in the process, educate staff and the public while reducing winter maintenance costs.



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Conference Abstracts

Managing Fish **Willow Room 10:30-12:00, March 15th**

Creating and Maintaining a Healthy Fishery in Illinois

Nate Herman & Austin Bennett, Herman Brothers Lake & Land Management

Email: support@hblakemanagement.com

In Illinois there are many fisheries that have much greater potential than what they have consistently produced. In this presentation we will challenge lake owners to think about their situation specifically rather than relating to the general concepts of fisheries management. We define what the ideal balanced fishery is by examining the life cycle of the lake, the water quality, and the fish population dynamics. Once the limiting factors are defined, creating and maintaining the healthy fishery is then achievable.

Reassessment of Iowa Darter Habitat in Illinois

Andy Stites, Illinois Natural History Survey

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The Iowa Darter (*Etheostoma exile*) is a state-threatened fish species inhabiting a limited range in northern Illinois. Historical surveys (from 1901-1995) found Iowa Darters at only 40 sites, with 19 sites being from glacial lakes near the Wisconsin border leading to the conclusion they primarily inhabited glacial lakes. Recent surveys (since 1995) have found *E. exile* at 37 sites, with only 13 of those sites being from glacial lakes. Many of the recent surveys have focused on headwater streams that have had limited to no previous records of fish sampling. The combined findings illustrate the need to evaluate whether populations of Iowa Darters routinely inhabit the headwater streams of northern Illinois. Using the recent collection locations, species distribution models were created to guide future sampling in streams potentially having *E. exile* populations. Models indicated many of the potential locations for *E. exile* are headwater streams with no previous history of fish community sampling. Targeted sampling in areas of high probability supported model predictions and have provided multiple new localities of Iowa Darter populations. Our results have changed what we know about the range of Iowa Darters in Illinois and have granted new insight of local habitat needs.

Active Bluegill Management for Improved Angling Quality

Mike Mounce, Illinois Department of Natural Resources

Email: mike.mounce@illinois.gov

A growing body of literature indicates that active bluegill management (i.e. fishing regulations) can maintain or increase angling quality in bluegill fisheries. In 1999, as part of a state-wide bluegill management study, an eight-inch (8") minimum length limit and 10 bluegill/day harvest limit were applied to Walnut Point Lake (59 acres). Bluegill soon stockpiled below the minimum length limit, typical of fish populations with good recruitment and average growth under minimum length limits. In 2007, a maximum length limit was applied allowing the harvest of 15 bluegill/day, of which, only 5 could be eight inches or longer. Age structure and the number of large bluegill collected improved. In 2013, concerns regarding body condition and potentially growth prompted liberalization of the limit to 20 bluegill/day (still allowing 5 fish eight inches or longer). Body condition and again the number of large bluegill collected improved. Under the maximum length limit the average number of large bluegill (> 8 inches) collected in surveys is significantly higher ($P < 0.02$) than in pre-regulation years (< 1999). The application and tailoring of this regulation, coupled with angler education, has demonstrated biological and sociological benefits in this bluegill fishery for eleven consecutive years. Resource-appropriate regulations, similarly tailored, could provide long-term angling quality benefits in other bluegill fisheries.

Lake Management Panel **Walnut Room 10:30-12:00, March 15th**

Projects Are Getting Done Through the Nine Lakes Watershed Partnership

Panel Led By: Lisa Woolford & Brian Valleskey

Join us for a panel discussion by HOA leaders from the communities of Tower Lakes and Timber Lake on raingarden and bioswale green infrastructure projects that came out of the Nine Lakes Watershed Plan. In addition to the details of these EPA 319-grant funded projects, they will discuss other funding sources that have allowed them to get things done for their lake communities! Also learn how the Nine Lakes Watershed Group has managed to stay together and support each other since its inception in 2010. The session will be moderated by Lisa Woolford and Brian Valleskey, Nine Lakes Watershed Partnership Co-Founders.

Panel Notes:



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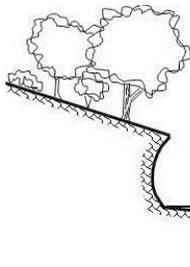
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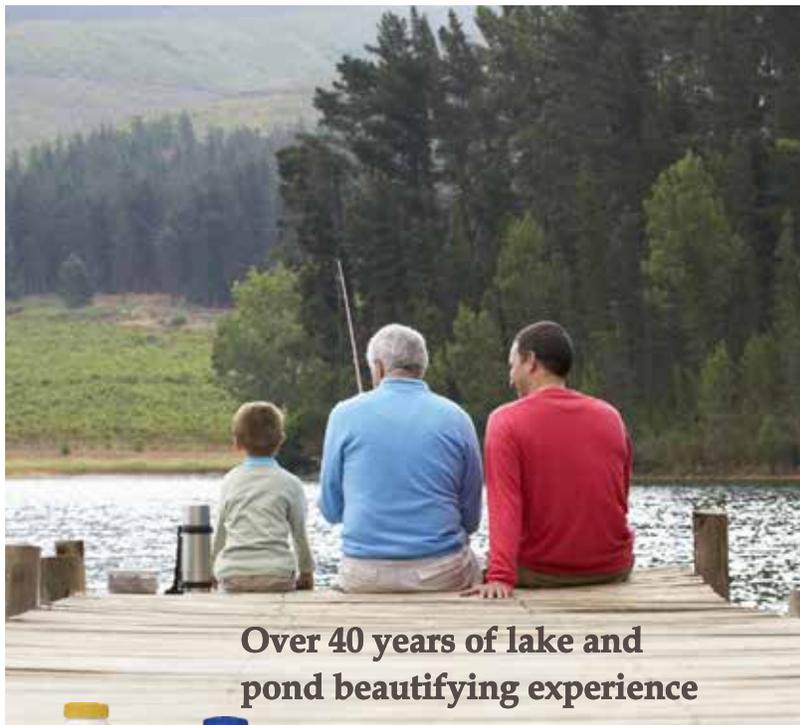
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Conference Abstracts

Wildlife (Other than Fish)..... **Willow Room 1:30-3:00, March 15th**

Semi-aquatic Mammals: A Love-Hate Relationship for Land Managers

Andrew Rutter, Lake County Forest Preserve District

Email: arutter@lcfpd.org

Semi-aquatic mammals (e.g. muskrat, mink, river otter, and beaver) serve a number of important ecological roles in freshwater aquatic systems, both as apex predators and ecosystem engineers. Collectively, they play a disproportionate role in ecosystems by creating habitat, structuring the environment, and functioning as keystone species. Despite the multitude of positive contributions they make to ecological communities, semi-aquatic mammal activity can often conflict with land management goals and cause damage to public and private property. Mitigating this damage often requires additional time, resources, and funds from land management organizations, and can be confusing and frustrating for those who are not familiar with management strategies. As these species are protected by both state and federal laws, proper permitting is often required before management can be implemented. As every situation is different, successful mitigation of damage often requires adaptive management and collaboration between agencies and landowners.

Propagation for Conservation of Common Freshwater Mussels in an Urban Stream System: What Do They Do and Why Should I Care?

Jessi DiMartini, Forest Preserve District of DuPage County

Email: jdemartini@dupageforest.com

Native freshwater mussels (family Unionidae) are among the most imperiled faunal groups in the United States and the world. In Illinois, over half of the 80 known species are endangered, threatened, extinct, extirpated or species in need of conservation. Freshwater mussels provide important ecosystem services and live in a waterway near you outside your back door. The intent of propagation is to augment low population numbers of live species within the waterway as a community restoration effort. The objectives of our conservation effort is to: keep common freshwater mussel species common in an urban stream system, restore the native mussel assemblage community and the ecosystem services they provide and establish wild, self-sustaining populations with recruitment over time. In 2016-17, we propagated, reared and released 24,377 sub-adult mussels of three common species; Plain pocketbook *Lampsilis cardium*, Fatmucket *Lampsilis siliquoidea* and White heelsplitter *Lasmigona complanata* at 37 sites across 18 miles in the West Branch DuPage River and two tributaries. In 2018, we began monitoring 9mm PIT (passive integrated transponders) tagged individuals with an underwater antenna unit revealing 65% pinged *L. cardium* and 74% *L. siliquoidea*.

Conservation of the Blanding's Turtle within the Chiwaukee Illinois Beach Lake Plain

Gary Glowacki, Lake County Forest Preserve District

Email: gglowacki@LCFPD.org

The Lake County Forest Preserve District (District) and partners have been monitoring the Blanding's Turtle population within a unit of the Chiwaukee Prairie Illinois Beach Lake Plain (Lake Plain) since 2004. This macrosite, which encompasses over 4,200 acres of protected habitat managed through a partnership of 9 public land management agencies in Illinois and Wisconsin, contains one of the largest known populations of Blanding's Turtles in the region. However, despite the seemingly sizable population and availability of habitat, modeling done in 2010 indicated that the population was in decline with a 95% probability of extinction in 50 years due to lack of recruitment and unsustainable levels of annual adult survivorship. In an effort to arrest the decline, the District formally instituted a recovery program in 2010 aimed at increasing recruitment and adult survivorship through head-starting and meso-predator control, combined with continued habitat restoration, management and monitoring. Since initiation of the recovery program, the District has released 981 head-started turtles and has been able to increase in situ nest success from 7.7% to 66.7% via meso-predator control. These efforts have resulted in a substantial increase in young turtles with the estimated number of juvenile (< 250 g) and sub-adult (250 to 749 g) turtles increasing from 160 to 399 individuals. During this same time period, annual adult survivorship has increased from 88% to 94.7% with the estimated adult population growing from 92 to 123 individuals. Using this new survivorship information, the population was re-modeled to determine the population trajectory. Preliminary results indicate that the population is now growing ($r = 0.006$), with a probability of extinction after 50 years of 0%. While these results are promising, it is important to note that this growth is contingent upon continued high rates of annual adult survival and nest success.

Citizen Monitoring & Algal Blooms **Walnut Room 1:30-3:00, March 15th**

Drone-based Water Quality Monitoring for Harmful Algae Blooms: A Review

Ruopu Li, Southern Illinois University-Carbondale

Email: Ruopu.Li@siu.edu

Rapid development and applications of unmanned aerial vehicles (UAVs) provide promising solutions and new opportunities for environmental monitoring. Owing to their flexibility in flight scheduling, high spatial resolution and costs-effectiveness, UAVs have become a popular tool for monitoring and recording dynamic environmental processes, such as emergence and breakout of harmful algae blooms (HABs) in water bodies. The HABs outbreak, often linked with anthropogenic eutrophication, has become a significant environmental health problem that threatens our communities. Existing studies show that using UAVs for HABs monitoring is a cost-effective means of assisting environmental managers in developing precautionary warning system and coping strategies. This presentation summarizes the state-of-the-art of UAVs and lightweight onboard multispectral sensors for HABs monitoring, and its technical workflows. The ideas and progress of our current project in Southern Illinois will be reported as well. It culminates in discussion on challenges and opportunities for future research and applications on drone-based lake monitoring.

Using Citizen Science to Tackle a Blue Green Algae Problem in Long Lake

Laura Risser, Squaw Creek Clean Water Alliance- Woods & Wetlands of the Sierra Club

Email: laurarisser22@gmail.com

Long Lake in Ingleside, Illinois is part of the Squaw Creek watershed, and has a history of harmful blue green algae blooms (HABs). HABs can have a scummy appearance, foul odor and may produce harmful chemicals known as cyanotoxins. Algae and aquatic plants need the essential nutrients phosphorus and nitrogen to grow. When a lentic freshwater system is introduced to elevated levels of phosphorus and nitrogen, usually from fertilizer runoff or organic waste, these nuisance blooms can occur. A group of citizen-science volunteers, known as the Squaw Creek Clean Water Alliance (SCCWA), conducted a weekly, six-month study to survey the water chemistry of Long Lake at two locations. One sample site was taken at an inlet from Mud Lake, and the other site was the outlet at the Long Lake Dam. The goal of this study was to determine whether the nutrient loading was internal or external. The samples were taken to a laboratory for analysis of total phosphorus, ortho phosphorus, nitrate, nitrite, total suspended sediments, total volatile solids, and total Kjeldahl nitrogen. Flow was also measured at each site. Total phosphorus levels were at or below the Illinois state standard of 0.05mg/L, yet there were still three algae blooms that occurred throughout the season, one of which was considered to be toxic for recreational use (>10 ug/L microcystin, ILEPA). There was a significant, over 90% retention of TSS entering Long Lake, which has the implication that there may be external loading. TSS is concentrating in the sediment of the hypolimnion, which would contribute to internal loading in the future. There was a surprisingly high amount of the biologically available ortho phosphorus detected at the outlet, which could imply short hydraulic residence time or non-point source pollution.

Citizen Science in Action

Greggory Miller & Holly Hudson, Illinois EPA & CMAP

Email: Greggory.Miller@illinois.gov / hhudson@cmapp.illinois.gov

Part 1

For the past 38 years the VLMP has provided education and information about Illinois lakes to concerned citizens, as well as providing a foundation for watershed planning and opportunity for environmental outreach. This presentation will provide highlights of the 2018 season, such as the distribution of monitored lakes across the state and Secchi transparency averages for the year. The presentation will also contain information on the Bloomwatch and iNaturalist Apps as aids for citizen scientists to use when monitoring Illinois Waterbodies.

Part 2

The second part of this presentation will talk about Lake Observations by Citizen Scientists & Satellites (LOCSS) project. This is a NASA funded grant and the goal is to better understand why the volume of water in lakes changes over time. Are lake volumes affected most by precipitation, water table height, evaporation or some other factors? LOCSS is working with a network of citizen scientists who are reporting lake height by simple lake gauges to answer these questions. Currently there are pilot sites in NC and WA and they are looking to expand their network, with potential in Illinois. The goal is to get people visiting the lake to submit weekly lake measurements and harness the power of volunteers to gather data that a single research team would be unable to obtain.



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